



9.13 TOWNSHIP OF HANOVER

This section presents the jurisdictional annex for the Township of Hanover. The annex includes a general overview of the Township of Hanover; an assessment of the Township of Hanover's risk, vulnerability, and mitigation capabilities; and a prioritized action plan to implement prior to a disaster to reduce future losses and achieve greater resilience to natural hazards.

9.13.1 Hazard Mitigation Planning Team

The following individuals are the Township of Hanover's identified HMP update primary and alternate points of contact and NFIP Floodplain Administrator.

Table 9.13-1. Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Name / Title: Thomas Quirk, Director Address: 1000 Route 10, PO Box 250, Whippany, NJ 07981-0250 Phone Number: 973-428-2463 Email: Tquirk@hanovertownship.com	Name / Title: David White, Captain, Hanover Police Address: 1000 Route 10, PO Box 250, Whippany, NJ 07981-0250 Phone Number: 973-428-2506 Email: DWhite@HanoverPolice.com
NFIP Floodplain Administrator Name / Title: Gerardo Maceira, PE, Township Engineer Address: 1000 Route 10, PO Box 250, Whippany, NJ 07981-0250 Phone Number: 973-428-2490 Email: GMaceira@hanovertownship.com	

9.13.2 Jurisdiction Profile

The Township of Hanover is located in the eastern portion of Morris County. It is bordered to the north by the Township of Parsippany-Troy Hills, to the east by the Township of East Hanover, to the south by the Borough of Florham Park and Township of Morris, and to the west by the Borough of Morris Plains. It has a total area of 10.73 square miles.

The Township is a residential-industrial community with most of its industrial facilities located in the vicinity of State Route 10, which is a major east-west road in the Township. The Township has two unincorporated communities—Whippany and Cedar Knolls. Morris County's largest airport facility, Morristown Airport, is located in the southern part of the Township adjacent to a large swamp.

According to the U.S. Census, the 2010 population for the Township of Hanover was 13,712. The estimated 2017 population was 14,436, a 5.3% increase from the 2010 Census. Data from the 2017 U.S. Census American Community Survey indicate that 5.5% of the population is 5 years of age or younger and 17.7% is 65 years of age or older. Communities must deploy a support system that enables all populations to safely reach shelters or to quickly evacuate a hazard area.

9.13.3 Growth/Development Trends

Understanding how past, current, and projected development patterns have or are likely to increase or decrease risk in hazard areas is a key component to understanding a jurisdiction's overall risk to its hazards of concern. Table 9.13-2 summarizes recent and expected future development trends, including major



residential/commercial development and major infrastructure development. Figures 9.13-1 and 9.13-2 at the end of this annex illustrate the geographically-delineated hazard areas and the location of potential new development.

Table 9.13-2. Recent and Expected Future Development

Type of Development	2015	2016	2017	2018	2019
Number of Building Permits for New Construction Issued Since the Previous HMP					
Single Family	6	8	8	5	6
Multi-Family	6	10	24	0	0
Other (commercial, mixed-use, etc.)	9	8	6	3	5

Property or Development Name	Type of Development	# of Units / Structures	Location (address and/or block and lot)	Known Hazard Zone(s)*	Description / Status of Development
Recent Major Development and Infrastructure from 2015 to Present					
Season's 52	Restaurant	1 Building – 8,630s.f.	Block 3401 Lot 2	Season's 52	Restaurant
Whippany Village	Retail/Residential	1 Building – 21,000s.f. Retail & 46 Apartments	Block 7402 Lot 2.01 476 Route 0	-	Under Construction
Panera Bread	Restaurant	1 Building – 3,500s.f.	Block 3201 Lot 1 26 Sylvan Way	-	Completed
24-Hour Fitness	Fitness Facility	1 Building – 40,000s.f.	Block 3201 Lot 1 30 Sylvan Way	-	Completed
Lowe's	Retail	1 Building - 138,000s.f.	Block 601 Lot 1 230 East Hanover Avenue	-	Completed
Hanover Commons	Retail	3 Buildings – Total 24,000s.f.	Block 1601 Lot 2.01 170 East Hanover Avenue	-	Completed
Whippany Crossing	Residential	6 Buildings – 24 Townhomes	Block 4701 Lot 29 Monroe Court	-	Completed
First Access	Warehouse	1 Building – 14,400s.f.	Block 2904 Lot 5 36 South Jefferson Road	-	Completed
Hanover Crossroads	Retail Center	5 Buildings – Total 106,000s.f.	Block 1702 Lot 12.03 110 East Hanover Avenue	Partial Deed Restricted Environmental Cap Area	Completed
MetLife	Office	1 Building - 208,000s.f.	Block 5801 Lot 1.05 One Metlife Way	-	Completed
Johnstone Supply	Warehouse	1 Building – 25,000s.f.	Block 2904 Lot 1.01 48 South Jefferson Road	-	Completed
Quick Chek	Retail	1 Building – 5,400s.f.	Block 2902 Lot 4.01 2 South Jefferson Road	-	Completed
Wegman's	Retail	1 Building – 134,000s.f.	Block 3201 Lot 1 34 Sylvan Way	-	Completed
Hanover Ridge	Residential	16- Single Family Dwellings	Block 9202 Lot 15 Barberry Court	-	Completed
Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years					
Performance Ford	Car Dealership	1 Building – 22,000s.f.	Block 6601 Lot 6 70 Route 10	Partially in Floodplain	Approved
Whippany Village - Starbucks	Retail	1 Building – 2,250s.f.	Block 7402 Lots 7.01 & 7.02	Partially in Floodplain	Approved



Property or Development Name	Type of Development	# of Units / Structures	Location (address and/or block and lot)	Known Hazard Zone(s)*	Description / Status of Development
			440 Route 10		
AC Hotel	Hotel	1 Building – 160 Rooms	Block 4802 Lot 2 190 Park Avenue		Approved
Delawanna	Office	1 Building – 9,000s.f.	Block 8803 Lot 6.01 691 Route 10	Partially in Floodplain	Approved
CareOne at Hanover	Assisted Living (Expansion)	1 Building – 54,000s.f. (162 Beds)	Block 7102 Lot 1 101 Whippany Road		Approved
Parsippany Road Multi-Family	Residential	10 Buildings – 129 Dwelling Units	Block 4204 Lot1 26 Parsippany Road	Partially in Floodplain	Approved
Springhill Suites Hotel	Hotel	1 Building – 130 Rooms	Block 7301 Lots 9.01, 13 & 14 262 Route 10	Partially in Floodplain	Approved
Irene Estates	Residential	5 Single Family Dwellings	Block 4701 Lots 28 & 30 299 Whippany Road		Approved
Chimney Rock	Restaurant	1 Building – 7,700s.f.	Block 8801 Lots 0 & 11 730 Route 10		Application
The District at 1515	Hotel	1 Building – 21,000s.f.	Block 0303 Lots 13 & 14 1515 Route 10		Concept

For new development located in a floodplain, the following measures will be included in the design:

In accordance with Chapter 141 “Floodplain Management” in the Township of Hanover General Code, the following methods shall be considered to reduce flood losses:

- A. Restricting or prohibiting uses which are dangerous to health, safety and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities;
- B. Requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;
- C. Controlling the alteration of natural flood plains, stream channels and natural protective barriers which help accommodate or channel floodwaters;
- D. Controlling filling, grading, dredging and other development which may increase flood damage; and
- E. Preventing or regulating the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards in other areas.

9.13.4 Capability Assessment

The Township of Hanover performed an inventory and analysis of existing capabilities, plans, programs, and policies that enhance its ability to implement mitigation strategies. Section 5 (Capability Assessment) describes the components included in the capability assessment and their significance for hazard mitigation planning. This section summarizes the following findings of the assessment:

- An assessment of legal and regulatory capabilities.
- Development and permitting capabilities.
- An assessment of fiscal capabilities.
- An assessment of education and outreach capabilities.
- Information on National Flood Insurance Program (NFIP) compliance.



- Classification under various community mitigation programs.
- The community's adaptive capacity for the impacts of climate change.

PLANNING, LEGAL AND REGULATORY CAPABILITY

The table below summarizes the legal and regulatory tools that are available to the Township of Hanover.

Table 9.13-3. Planning, Legal and Regulatory Capability

Legal and Regulatory Capability					
	Do you have this? (Yes/No)	Authority that enforces (Federal, State, Regional, County, Local)	State Mandated/Allowed	Has this been integrated? If yes- how?	
				If yes- how? Describe in comments	If no - can it be a mitigation action? If yes, add Mitigation Action #.
Codes, Ordinances, & Requirements					
Building Code	Yes	Local and State	Yes	No	No
Comment: State mandated on local level under NJAC 5:23-3.14. International Building Code – New Jersey Edition, 2018, NJAC 5:24-3.14 Adopted 9/3/2019. Enforced by Building Department, State Uniform Construction Code Act (N.J.S. 52:27D-119 et seq.)					
Zoning Code	Yes	Local	Yes, if have planning board	No	No
Comment: State permissive on local level. Per State of NJ Municipal Land Use Law (MLUL) L. 1975, s. 2, eff Aug 1, 1976, 40-55D-62: 49. Power to zone, requires all jurisdictions to have current zoning and other land development ordinances after the planning board has adopted the land use element and master plan. Enforced by Zoning Officer, Chapter 166. Zoning map updated March 2020.					
Subdivisions	Yes	Local	Yes, if have planning board	No	No
Comment: P.L.1975, c.291 (C.40:55D-47): 40:55D-37. Grant of power; referral of proposed ordinance; county planning board approval. Dictated by the Municipal Land Use Law. NJ Statute 40:27-6.2 The board of freeholders of any county having a county planning board shall provide for the review of all subdivisions of land within the county by said county planning board and for the approval of those subdivisions affecting county road or drainage facilities as set forth and limited hereinafter in this section. Enforced by Zoning Officer, Chapter 166.					
Stormwater Management	Yes	State and Local	Yes	No	No
Comment: See Title 7 of the NJ Administrative Code, N.J.A.C. 7:8. Enforced by Planning Board, March 2005.					
Post-Disaster Recovery	No	-	No	-	-
Comment:					
Real Estate Disclosure	Yes	State	Yes	No	No
Comment: Before signing a contract of sale, all purchasers must receive a New Jersey Public Offering Statement (POS) approved by the New Jersey Real Estate Commission. The POS provides information such as proximity to hospitals, schools, fire and police, as well as any hazards, risks or nuisances in or around the subdivision. Enforced by Township Administrator. Identifies hazardous areas in Hanover: Underground lines, sewage, airport.					
Growth Management	Yes	Local and State	Yes, if have planning board	No	No
Comment: State Mandated on a municipal level. See Zoning Ordinance. Plan Endorsement Process via the State Development & Redevelopment Plan provides for the delineation of Growth Areas and Environs; Use of the endorsed plans in the implementation of state environmental regulations makes the Plan Endorsement process a growth management strategy. Land Use Element in Master Plan.					
Shoreline Development	No	-	No	-	-
Comment: NJ Coastal Area Facility Review Act (N.J.S.A. 13:19) or CAFRA regulates almost all development along the coast for activities including construction, relocation, and enlargement of buildings or structures, and excavation, grading, shore protection structures, and site preparation. This law is implemented through NJ's Coastal Zone Management Rules N.J.A.C. 7:7E-1 et seq.					



Legal and Regulatory Capability					
	Do you have this? (Yes/No)	Authority that enforces (Federal, State, Regional, County, Local)	State Mandated/Allowed	Has this been integrated? If yes- how?	
				If yes- how? Describe in comments	If no - can it be a mitigation action? If yes, add Mitigation Action #.
Codes, Ordinances, & Requirements					
Site Plan Review	Yes	Local	Yes	No	No
Comment: Dictated by the Municipal Land Use Law which sets forth minimum requirements for plans, etc., timeframes for development review. NJ Statute 40:27-6.2: The board of freeholders of any county having a county planning board shall provide for the review of all subdivisions of land within the county by county planning board and for the approval of those subdivisions affecting county road or drainage facilities. 40:27-6.10: Each municipal clerk shall file with the county planning board a copy of the planning and zoning ordinances of the municipality and shall notify the county planning board of the introduction of any revision or amendment of such an ordinance which affects lands adjoining county roads or other county lands, or lands lying within 200 feet of a municipal boundary, or proposed facilities or public lands shown on the county master plan or official county map. Township Engineer and Township Planner perform Zoning Compliance and Development Standards Review.					
Environmental Protection	No	-	Yes	-	-
Comment: The rules that are utilized by the NJ Department of Environmental Protection and other environmental agencies are codified at Title 7 of the NJ Municipal Administrative Code.					
Flood Damage Prevention	Yes	Local	No	No	No
Comment: The NJ State Law Flood Area Control Act (N.J.S.A. 58:16A-52) and the National Flood Control Act of 1968 (NFIP) are state and federal acts to support minimization of flood losses. They do not require local adoption but as enforced by the NJDEP, the floodplain ordinances of each municipality must be reviewed for compliance with these regulations. In addition, participation in the NFIP requires a floodplain ordinance.					
Wellhead Protection	No	-	No	-	-
Comment: Delineation of well head protection areas (WHPAs) is part of the NJ-approved 1991 well head protection plan (WHPP) for public community water supply wells. These are priority areas for efforts to prevent and clean up ground water contamination. Municipalities are empowered to regulate land use, physical facilities and other activities within WHPAs areas, the potential for groundwater contamination can be reduced under the provisions of the New Jersey Municipal Land Use Law, N.J.S.A. 40:55D-1 et seq., which authorizes each municipality to plan and regulate land use to secure a safe and adequate drinking water supply for its residents. Also refer to Safe Drinking Water Regulations (NJAC 7:10-11.7(b)1)).					
Emergency Management	No	-	No	-	-
Comment: Per the NJ Civilian Defense and Disaster Control Act (App.A:9_43.2) Counties and municipalities must have written Emergency Operations Plans to be reviewed every 2 years. See Emergency Operations Plans below.					
Climate Change	No	-	No	-	-
Comment:					
Disaster Recovery Ordinance	No	-	No	-	-
Comment:					
Disaster Reconstruction Ordinance	No	-	No	-	-
Comment:					
Other	No	-	No	-	-
Comment:					
Planning Documents					
Master Plan	Yes	Local	Yes	No	No
Comment: Per NJSA: Yes, if planning board (40:55D-28) and must be re-examined every ten years (40:55D-89.1); November 2013. Planning Board, November 2013.					



Legal and Regulatory Capability					
	Do you have this? (Yes/No)	Authority that enforces (Federal, State, Regional, County, Local)	State Mandated/Allowed	Has this been integrated? If yes- how?	
				If yes- how? Describe in comments	If no - can it be a mitigation action? If yes, add Mitigation Action #.
Codes, Ordinances, & Requirements					
Capital Improvement Plan	Yes	Local	Allowed	No	No
Comment: Per NJSA 40:55D-29) the governing body is authorized to direct the planning board to prepare a CIP with at least a six-year planning horizon.					
Disaster Debris Management Plan	No	-	No	-	-
Comment:					
Floodplain or Watershed Plan	Yes	Local	No	No	No
Comment: U.S. Army Corps of Engineers Regulatory Program Regulations (33 CFR 320-332). Enforced by Township Engineer, Chapter 141.					
Stormwater Management Plan	Yes	Local	Yes	No	No
Comment: Per NJDEP Storm Water Management Rule (N.J.A.C. 7:8, et seq.). The Municipal Stormwater Regulation Program was developed in response to the U. S. Environmental Protection Agency's (USEPA) Phase II rules published in December 1999. The Department issued final stormwater rules on February 2, 2004 and four (4) NJPDES general permits authorizing stormwater discharges from Tier A and Tier B municipalities, as well as public complexes, and highway agencies that discharge stormwater from municipal separate storm sewers (MS4s). Enforced by Planning Board, Chapter 166-104, March 2005.					
Stormwater Pollution Prevention Plan	Yes	Local, State	Yes	No	No
Comment: Per NJDEP Storm Water Management Rule (N.J.A.C. 7:8, et seq.). The Municipal Stormwater Regulation Program was developed in response to the U. S. Environmental Protection Agency's (USEPA) Phase II rules published in December 1999. The Department issued final stormwater rules on February 2, 2004 and four (4) NJPDES general permits authorizing stormwater discharges from Tier A and Tier B municipalities, as well as public complexes, and highway agencies that discharge stormwater from municipal separate storm sewers (MS4s).					
Urban Water Management Plan	No	-	No	-	-
Comment:					
Habitat Conservation Plan	No	-	No	-	-
Comment: May develop a conservation plan element in master plan per NJSA 40:5D-28b (8).					
Economic Development Plan	No	-	No	-	-
Comment: Per NJSA 40:55D-28b. (9) There can be a generic Economic Development Element of the County Comprehensive Plan. Municipality can establish Economic Development Commission that can facilitate incentive programs (façade programs, low-interest loans, etc.).					
Shoreline Management Plan	No	-	No	-	-
Comment:					
Community Wildfire Protection Plan	No	-	No	-	-
Comment:					
Community Forest Management Plan	No	Local	No	-	-
Comment:					
Transportation Plan	Yes	Local	No	No	No



Legal and Regulatory Capability					
	Do you have this? (Yes/No)	Authority that enforces (Federal, State, Regional, County, Local)	State Mandated/Allowed	Has this been integrated? If yes- how?	
				If yes- how? Describe in comments	If no - can it be a mitigation action? If yes, add Mitigation Action #.
Codes, Ordinances, & Requirements					
Comment: Circulation plan and Circulation Plan Appendix - Bicycle and Pedestrian Connectivity Framework Plan element in master plan per NJSA 40:55D-28b. (4).					
Agriculture Plan	No	-	No	-	-
Comment: May develop a farmland preservation plan element per NJSA 40:5D-28b (13).					
Climate Action Plan	No	-	No	-	-
Comment: May develop a green building and environmental sustainability plan element per NJSA 40:5D-28b (16).					
Tourism Plan	No	-	No	-	-
Comment:					
Business Development Plan	No	-	No	-	-
Comment: Have an Economic Development Advisory Committee					
Landmark Commission	Yes	Local	Allowed	No	No
Comment: 40:32-6. Acquisition and preservation of historical buildings and data - Any county may acquire, by gift or purchase, any real estate or any interests therein, together with any and all buildings thereon within the limits of the county for historical purposes, or for the purpose of preserving therein or thereon historical data and objects of historical interest.					
Response/Recovery Planning					
Emergency Operations Plan (EOP)	Yes	Local	Yes	No	No
Comment: Per the NJ Civilian Defense and Disaster Control Act (App.A:9_43.2) Counties and municipalities must have written Emergency Operations Plans to be reviewed every 2 years.					
Threat & Hazard Identification & Risk Assessment (THIRA)	No	-	No	-	-
Comment:					
Post-Disaster Recovery Plan	No	-	No	-	-
Comment:					
Continuity of Operations Plan	No	-	No	-	-
Comment:					
Public Health Plan	No	-	No	-	-
Comment:					
Other	No	-	No	-	-
Comment:					

Table 9.13-4. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? - If no, who does? If yes, which department?	Yes Township Engineer and Township Planner perform Zoning Compliance and Development Standards Review
Does your jurisdiction have the ability to track permits by hazard area?	Yes



Criterion	Response
Does your jurisdiction have a buildable lands inventory? -If yes, please describe briefly. -If no, please quantitatively describe the level of buildout in the jurisdiction.	No Township is fully built out

ADMINISTRATIVE AND TECHNICAL CAPABILITY

The Township has established an Environmental Commission and Open Space Committee that aid in planning decisions to support the conservation and preservation of the Township's critical environmental features.

The table below summarizes potential staff and personnel resources available to the Township of Hanover.

Table 9.13-5. Administrative and Technical Capabilities

Staff/Personnel Resource	Available?	Department/Agency/Position
Administrative Capability		
Planning Board	Yes	Township Engineer, Planner, Land Use Attorney
Mitigation Planning Committee	No	-
Environmental Board / Commission	Yes	Environmental Commission
Open Space Board / Committee	Yes	Township Committee Liaison and Planner
Economic Development Commission / Committee	Yes	Township Committee Liaison and Planner
Warning Systems / Services (reverse 911, outdoor warning signals)	Yes	OEM NotifyMe
Maintenance program to reduce risk	Yes	Township Engineer/DPW
Mutual aid agreements	Yes	Administrator
Technical/Staffing Capability		
Planners or engineers with knowledge of land development and land management practices	Yes	Township Engineer and Township Planner
Engineers or professionals trained in building or infrastructure construction practices	Yes	Township Engineer, Township Planner, and Construction Office
Planners or engineers with an understanding of natural hazards	Yes	Township Engineer, Township Planner, DPW Superintendent, and Construction Office
Staff with training in benefit/cost analysis	Yes	Municipal Financial Officer
Staff with training in green infrastructure	Yes	Engineer
Staff with education/knowledge/training in low impact development	Yes	Engineer
Surveyor	Yes	Engineer
Stormwater engineer	Yes	Engineer
Personnel skilled or trained in GIS applications	Yes	Engineer
Local or state water quality professional	Yes	Engineer
Scientist familiar with natural hazards in local area	No	-
Emergency manager	Yes	Director OEM
Grant writers	No	-
Resilience Officer	No	-
Watershed planner	Yes	Whippany River Action Committee
Environmental specialist	No	-
Other professionals trained in conduction damage assessments	Yes	Engineer and Construction Office

**FISCAL CAPABILITY**

The Township established an Open Space, Parkland and Facilities Preservation Trust Fund of \$0.02 per \$100 of assessed value and a Township Tree Fund to aid in funding open space acquisition and preservation projects.

The table below summarizes financial resources available to the Township of Hanover.

Table 9.13-6. Fiscal Capabilities

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants (CDBG, CDBG-DR)	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	No
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Clean Water Act 319 Grants (Nonpoint Source Pollution)	No
Other	Yes

EDUCATION AND OUTREACH CAPABILITY

The table below summarizes the education and outreach resources available to the Township of Hanover.

Table 9.13-7. Education and Outreach Capabilities

Criterion	Response
Do you have a public information officer or communications office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? • If yes, briefly describe.	Yes Website provides link to County HMP on OEM Webpage
Do you use social media for hazard mitigation education and outreach? • If yes, briefly describe.	Yes FaceBook
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, briefly describe.	Yes Environmental Commission, Green Team, School and Park Safety Committee
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, briefly describe.	No
Do you have any established warning systems for hazard events? • If yes, briefly describe.	Yes NotifyMe – both non-emergency and SMART911

COMMUNITY CLASSIFICATIONS

The table below summarizes the classifications for community programs available to the Township of Hanover.





Table 9.13-8. Community Classifications

Program	Participating?	Classification	Date Classified
Community Rating System	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	Yes	2	2010
Public Protection (Fire ISO Protection Class)	Yes	Fire District No. 2 - Class 4 Fire District No. 3 - Class 4	June 2013
Storm Ready Certification	No	-	-
Firewise Community Classification	No	-	-

ADAPTIVE CAPACITY

Adaptive capacity is defined as “the ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or respond to consequences” (IPCC 2014). In other words, it describes a jurisdiction’s current ability to adjust to, protect from, or withstand a hazard event. This term is often discussed in reference to climate change; however, adaptive capacity also includes an understanding of local capacity for adapting to current and future risks and changing conditions.

The municipality does not have access to resources to determine the possible impacts of climate change upon the municipality. It is unclear if the administration is supportive of integrating climate change in policies or actions. Climate change is not being integrated into current policies/plans or actions (projects/monitoring) within the municipality.

The table below summarizes the adaptive capacity rating for each hazard.

Table 9.13-9. Adaptive Capacity

Hazard	Adaptive Capacity (Capabilities) - High/Medium/Low
Dam Failure	Medium
Disease Outbreak	High
Drought	Medium
Earthquake	Medium
Extreme Temperatures	Medium
Flood	Medium
Geological Hazards	Low
Harmful Algal Bloom	Low
Hazardous Materials	High
Infestations	Medium
Severe Weather	High
Severe Winter Weather	High
Wildfire	Low

Notes:

High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement;

Low = Capacity does not exist or could use substantial improvement; Unsure = Not enough information is known to assign a rating.

NATIONAL FLOOD INSURANCE PROGRAM

This section provides specific information on the management and regulation of the regulatory floodplain.



Table 9.13-10. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Engineering
Who is your floodplain administrator? (name, department/position)	Engineering
Are any certified floodplain managers on staff in your jurisdiction?	No
What is the date that your flood damage prevention ordinance was last amended?	12/12/19
Does your floodplain management program meet or exceed minimum requirements? • If exceeds, in what ways?	Meets
When was the most recent Community Assistance Visit or Community Assistance Contact?	n/a
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? • If so, state what they are.	No
Are any RiskMAP projects currently underway in your jurisdiction? • If so, state what they are.	Yes Morris County FEMA maps are preliminary
Do your flood hazard maps adequately address the flood risk within your jurisdiction? • If no, state why.	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program?	Yes
<input type="checkbox"/> If so, what type of assistance/training is needed?	Engineer needs CFM certification
Does your jurisdiction participate in the Community Rating System (CRS)? • If yes, is your jurisdiction interested in improving its CRS Classification? • If no, is your jurisdiction interested in joining the CRS program?	No n/a Yes
How many flood insurance policies are in force in your jurisdiction?*	61
• What is the insurance in force?	\$24,140,500
• What is the premium in force?	\$168,851
How many total loss claims have been filed in your jurisdiction?*	81
• How many claims are still open or were closed without payment?	0 Open, 15 Closed without payment
• What were the total payments for losses?	\$3,509,884
Do you maintain a list of properties that have been damaged by flooding?	Yes
Do you maintain a list of property owners interested in flood mitigation?	Yes

* Note: Policies and Claims from <https://bsa.nfipstat.fema.gov/reports/1011.htm> and <https://bsa.nfipstat.fema.gov/reports/1040.htm> as of 09/30/2018

ADDITIONAL AREAS OF EXISTING INTEGRATION

The Township of Hanover Land Use Plan (2013) aims to preserve the existing character of the community while planning for future development. The Plan details recommendations for each zoning district in the Township; specific design standards for development are recommended in the zoning districts adjacent to the Whippany River stream corridor and adjacent to or containing wetlands to preserve and protect the water quality and quantity of these areas. These goals and recommendations are built upon those from a 2004 Land Use Amendment for the Town Center.

The Township is located in the Highlands Planning Area and the goals and objectives of the Open Space and Recreation Plan Update (2011) include identifying, acquiring and preserving property to enhance the quality of life for residents, expand the park system and greenway connections, and preserve environmentally sensitive areas. The Plan recommends multiple actions for mitigation including, reviewing ordinances and working with





the Planning Board to create legislation that requires implementation of bioswales and other forms of green infrastructure to reduce impervious; priority areas for reducing impervious cover are areas where there is high potential for groundwater recharge.

The 2005 Stormwater Management Plan was adopted as a means to reduce the impacts on public health and the infrastructure by flooding caused by stormwater runoff, as well as increased soil erosion and nonpoint source pollution. The Plan identifies the major rivers and streams within the Township and details how they are affected by stormwater runoff. Mitigation actions include changes to existing ordinances and adoption of new ordinances, including riparian buffer and steep slopes regulations. If a new development cannot provide satisfactory stormwater management on site, a mitigation project can be implemented by the developer within the same drainage area.

The Township has multiple ordinances pertaining to the mitigation of hazards. These ordinances include the NFIP Flood Damage Prevention Ordinance, a fire prevention ordinance, a floodplain management ordinance, a hazardous substance discharge and recovery costs ordinance, a snow and ice removal ordinance, and a soil removal ordinance.

In the performance period since adoption of the 2015 HMP, the Township of Hanover made progress on integrating hazard mitigation into other initiatives. The following plans and programs currently integrate components of the HMP and strategy:

- Updated website to include a link to the Morris County HMP.
- Designated the Township of Hanover Community Center as a shelter, warming station, and cooling center (red cross certified) to meet the needs of 749 occupants. Cots would need to be supplied by the county.
- Instituted agreement with Care One at Hanover Township to use beds for critical care in an emergency.

9.13.5 Hazard Event History Specific to the Jurisdiction

Morris County has a history of hazard events, as detailed in Section 4 (Risk Assessment) of this plan. A summary of historical events is provided in each of the hazard profiles in Section 4.4 (Hazard Profiles) and includes a chronology of events that affected Morris County and its jurisdictions. The Township of Hanover's history of federally-declared (as presented by FEMA) and significant hazard events (as presented in NOAA-NCEI) is consistent with that of Morris County. Table 9.13-11 provides details regarding municipal-specific loss and damages the Township experienced during hazard events. Information provided in the table below is based on reference material or local sources.

Table 9.13-11. Hazard Event History

Date(s) of Event	Event Type (disaster declaration if applicable)	Morris County Designated?	Summary of Event	Summary of Local Damages and Losses
January 21-24, 2016	Severe Winter Storm and Snowstorm (DR-4264)	Yes	An impulse from the west coast traversed the midsection of the country, then developed into a low-pressure system as it tracked across the Gulf States before intensifying along the Carolina coast into a major nor'easter,	The Township did not report damages.



Date(s) of Event	Event Type (disaster declaration if applicable)	Morris County Designated?	Summary of Event	Summary of Local Damages and Losses
			producing record snowfall in parts of New Jersey on January 23rd. It then moved out to sea after passing by the mid-Atlantic coast early on January 24th. Wind gusts up to 60 MPH produced blizzard conditions as visibilities dropped to one-quarter mile or less in spots. Snowfall totals included 21.0 inches in Chatham.	
March 6-7, 2018	Severe Winter Storm and Snowstorm (DR-4368)	Yes	Precipitation gradually overspread the region during the overnight hours of March 6th to the 7th. 12 to 24 inches were observed across large parts of Morris County. The snow contained large amounts of liquid, making it heavy and wet. This resulted in downed trees, limbs, and wires, leading to numerous power outages across portions of New Jersey, especially where the heaviest snow was reported.	The Township did not report damages.

9.13.6 Jurisdiction-Specific Vulnerabilities and Hazard ranking

The hazard profiles in Section 4 (Risk Assessment) provide detailed information regarding each plan participant's vulnerability to the identified hazards. The following summarizes the hazards of greatest concern and risk to the Township of Hanover.

In an attempt to summarize the confidence level regarding the input utilized to populate the hazard ranking, a gradient of certainty was developed. A certainty factor of high, medium or low was selected and assigned to each hazard to provide a level of transparency and increased understanding of the data utilized to support the resulting ranking. The following scale was used to assign a certainty factor to each hazard:

- High—Defined scenario/event to evaluate; probability calculated; evidenced-based/quantitative assessment to estimate potential impacts through hazard modeling.
- Moderate—Defined scenario/event or only a hazard area to evaluate; estimated probability; combination of quantitative (exposure analysis, no hazard modeling) and qualitative data to estimate potential impacts.
- Low—Scenario or hazard area is undefined; there is a degree of uncertainty regarding event probability; majority of potential impacts are qualitative.



Table 9.13-12. Summary of Risk Assessment Results

Hazard of Concern	Hazard/ Scenario Area Evaluated	Population		Buildings		Economy (Loss)		Certainty Factor
Dam Failure	Partial or complete failure of a dam There are 3 dams in the Township, according to NJDEP.	Population impacted is dependent on the capacity of the dam, the extent of the dam failure inundation area and the severity of the failure.		The number of building impacted is dependent on the capacity of the dam, the extent of the dam failure inundation area and the severity of the failure.		Economic impacts include dam/building/infrastructure repairs; debris removal/disposal; utility impacts.		Low
Disease Outbreak	Disease Outbreaks which include: Mosquito-Borne Diseases, Tick-Borne Diseases, Campylobacteriosis, Influenza, Mumps, Ebola	Population impacted is dependent on the disease and severity of the outbreak; in some cases immuno-compromised persons are more vulnerable.		Structural impacts due to disease outbreak would be limited.		Economic losses can include County financial impacts to monitor/address outbreaks; lost wages or commercial interruptions; depends on the severity and type of disease outbreak.		Low
Drought	Prolonged drought event - The County is serviced by water supplies who primarily get water from groundwater sources; some surface water sources.	Entire population exposed. Population on surface water supplies may be impacted first; water restrictions/contamination; increased wildfire risk.		Droughts are not expected to cause direct damage to buildings.		Losses include aesthetic, landscape/nursery/agricultural industry impacts.		Low
Earthquake	"100, 500-, 2,500-Year Mean Return Period (MRP) Events evaluated NEHRP Soils D&E (soft soils that amplify ground shaking are present in the County"	NEHRP D&E:	10,984	NEHRP D&E:	5,662	100-year Loss:	\$0	High
		Liquefaction Class 4:	43	Liquefaction Class 4:	108	500-year Loss:	\$7,646,508	
						2,500-year Loss:	\$106,302,620	
Extreme Temperature	Extreme temperature event (heat or cold)	Over 65 Population:	2,550	Physical impacts due to extreme temperatures would be limited.		Loss of business function is possible due to unexpected repairs (i.e. pipes bursting) or power failures.		Low
		Population Below Poverty Level:	346					
Flood	100- and 500-Year Mean Return Period Event	100-year	71	100-year	112	100-year Loss:	\$349,873,206	High
		500-year	82	500-year	131			
Geological		Class A:	0	Class A:	0	Class A:	0	Moderate



Hazard of Concern	Hazard/ Scenario Area Evaluated	Population		Buildings		Economy (Loss)		Certainty Factor
	High Landslide Susceptibility Areas and Areas developed over carbonate rock	Class B:	0	Class B:	0	Class B:	\$0	
		Carbonate Bedrock:	0	Carbonate Bedrock:	0	Carbonate Bedrock:	\$0	
Harmful Algal Bloom	Any body of water or area adjacent that is susceptible to harmful algal bloom.	Population in contact (e.g., swimming) or drinking water from surface water impacted can result in a range of health effects		General building stock impacts due to harmful algal bloom are not anticipated. Critical facilities (i.e., water treatment plants) could lead to plant closures.		Economic impacts range from recreational closure of impacted waterbodies; cost to sample/monitor/remediate.		Low
Hazardous Substance	Release of a hazardous substance from a fixed site.	Population impacted will depend on the type of material and scale of the incident. May include population within small radii of site.		The degree of damages to a building depends on the scale of the incident.		The degree of damages depends on the scale of the incident.		Low
Infestation	Infestation including: Insects [e.g. Gypsy Moth, Mosquitoes, Spotted Lanternfly, Emerald Ash Borer], White-Tailed Deer, Rodents	Population impacted will depend on the type and severity of infestation and may cause an increased risk for disease outbreak.		Physical impacts will be limited to indirect impacts from invasive species which affect crops and vegetation.		Economic impact will depend on the type and severity of infestation and may cause an increased risk for disease outbreak.		Low
Severe Weather	Severe Weather Event	Entire population exposed; The degree of impact to the population depends on the scale of the incident.		Entire building stock is exposed; The degree of impact depends on the scale of the incident.		Annualized Loss:	\$65,824	High
						100 -Year Loss:	\$992,102	
						500-year Loss:	\$5,221,370	
Severe Winter Weather	Severe Winter Weather Event	All residents/commuters/visitors are exposed; socially-vulnerable populations may be at increased risk.		All buildings are exposed; the degree of impact depends on the scale of the incident.		The cost of snow and ice removal and repair of roads/infrastructure can impact operating budgets.		Low
Wildfire	Wildfire Fuel Hazard areas (High, Very High, Extreme)	Wildfire:	15	Wildfire:	11	Wildfire:	\$15,453,719	Moderate



REPETITIVE FLOOD LOSSES

The following summarizes the repetitive and severe repetitive flood losses in the Township of Hanover.

- Number of repetitive loss (RL) properties: 10
- Number of severe repetitive loss (SRL) properties: 1
- Number of RL/SRL properties that have been mitigated: 0

Source: FEMA BureauNet, 2019

Note: RL and SRL as of 04/26/2019; The number of SRL properties excludes RL properties and includes properties that have been verified only (SRL_Indicator = V).

CRITICAL FACILITIES

The table below identifies critical facilities in the community located in the 1-percent and 0.2-percent floodplain.

Table 9.13-13. Potential Flood Losses to Critical Facilities and Lifelines

Name	Type	Exposure		Status of Mitigation
		1% Event	0.2% Event	
Texas Eastern Gas Transmission	Natural Gas	x	x	2020-Hanover-001
Whippany - Suburban Energy Services	Natural Gas	x	x	2020-Hanover-002
Lake Parsippany Dike	Dam	x	x	2020-Hanover-003

Source: Morris County, 2019

ADDITIONAL IDENTIFIED VULNERABILITIES

According to the 2015 preliminary FEMA Flood Insurance Study (FIS) for Morris County, flooding in Hanover Township is mainly from the Whippany River. The River typically floods as a result of heavy rains during the summer and fall months. Due to the low permeability of certain soils within the Township, some areas are subject to frequent flooding and ponding of surface water during periods of heavy rain (FEMA FIS 2015).

The jurisdiction has identified the following vulnerabilities within their community:

- Communications system in lifeline buildings of the Municipal Building, DPW, and Community center do not have connectivity of phone lines. Solution for Verizon to install fiber optic lines to the 2 buildings.

HAZARD AREA EXTENT AND LOCATION

Hazard area extent and location maps were generated for the Township of Hanover that illustrate the probable areas impacted within the municipality. These maps are based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps have been generated only for those hazards that can be clearly identified using mapping techniques and technologies and for which the Township of Hanover has significant exposure. Refer to Figures 9.13-1 and 9.13-2.

HAZARD RANKING

This section includes the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 (Risk Assessment). The



ranking process involves an assessment of the likelihood of occurrence for each hazard; its potential impacts on people, property, and the economy; and community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 4.3 (Hazard Ranking), each plan participant may have differing degrees of risk exposure and vulnerability compared to Morris County as a whole. Therefore, each jurisdiction ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the Township of Hanover. The Township of Hanover was provided the Morris County hazard ranking table, as well as its individual results, to determine the relative risk of the hazards of concern to the community.

Table 9.13-14. Township of Hanover Hazard Ranking Input

Dam Failure	Disease Outbreak	Drought	Earthquake	Extreme Temperature	Flood	Geological Hazard
Medium	High	Medium	Medium	Medium	Medium	Low

Harmful Algal Bloom	Hazardous Substances	Infestation	Severe Weather	Severe Winter Weather	Wildfire
Low	High	Medium	High	High	Low

9.13.7 Mitigation Strategy and Prioritization

This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and provides action prioritization.

PAST MITIGATION INITIATIVE STATUS

The following table summarizes the jurisdiction's progress on their mitigation strategy identified in the 2015 HMP. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and can also be found under 'Capability Assessment' presented previously in this annex.

Table 9.13-15. Status of Previous HMP Mitigation Actions

2015 Action Number Action Description	Responsible Party	Status (In Progress, No Progress, Ongoing Capability, or Completed)	Include in the 2020 HMP Update?	
			Check if Yes	Enter 2020 HMP Action #
TH - 1 Relocation of Whippany Fire Department on 440 Route 10.	Boards of Fire Commissioners District 2/ OEM/Engineering	In progress. Funding secured; project expected to be completed by end of 2020.	x	2020-Hanover-009
TH - 2 Retrofit building/secure structures (tent) outside of Cedar Knolls Fire House at 82 Ridgedale Avenue.	OEM/Engineering	In progress. This action is in discussion with mitigation committee and being reviewed by Fire Commissioners.	x	2020-Hanover-0011



2015 Action Number Action Description	Responsible Party	Status (In Progress, No Progress, Ongoing Capability, or Completed)	Include in the 2020 HMP Update?	
			Check if Yes	Enter 2020 HMP Action #
TH - 3 Backup power for DPW on 25 North Jefferson Road, Whippany.	OEM/Engineering	Completed. Generator installed January 2019.	-	n/a
TH - 4 Backup power upgrade for the Community Center (warming/cooling center) on 15 North Jefferson Road- Conduct a load analysis of building to determine if current generator can supply air conditioning to building.	OEM/Engineering	In progress. Township Engineer is researching options for cooling and estimated costs of replacing existing generator.	-	2020-Hanover-012
TH - 5 Engineering study to improve drainage and conveyance along Parsippany Road and Horsehill Road.	OEM/Engineering	No progress. 2020 budget funds to conduct a drainage study at the bottom of Horse Hill Road have been requested by Township Engineer.	x	2020-Hanover-008
TH - 6 Open dialog and develop relationship with Suburban Propane to discuss potential hazards and identify protective measures.	OEM/Engineering	Ongoing Capability. Township Fire Inspectors have met with Suburban Propane and continue to discuss and obtain information on hazards located at this location.	-	n/a
TH - 7 Develop list of RL and SRL properties and obtain elevation or acquisition interest from homeowners.	OEM/Engineering	Completed. No action has been taken due to limited OEM staffing and other priorities. The Township has 5 RL properties.	-	n/a
TH - 8 Develop all-hazards public education and outreach program for hazard mitigation and preparedness to include update of webpage with hazard mitigation and preparedness information.	OEM/Engineering	Completed. The Township website has been updated and additional information will be posted regarding preparedness for residents. The county hazard mitigation plan link is posted.	-	n/a
TH - 9 Revitalize CERT program to include recruitment, training and acquisition of equipment.	OEM/Engineering	Complete. The Township has conducted Public Safety Academy training for residents in 2017 and 2019. This training will be conducted again in 2020.	x	n/a

In addition to the above progress, the Township of Hanover identified the following mitigation projects/activities that were completed but not identified in the 2015 HMP mitigation strategy:

- DPW regularly cleans and repairs catch basins.
- DPW performed a de-snagging operation on the Whippany River along Route 10.

PROPOSED HAZARD MITIGATION INITIATIVES FOR THE PLAN UPDATE

The Township of Hanover was invited to participate in a risk assessment workshop in November 2019 in which detailed information was provided about assets exposed and vulnerable to the identified hazards of concern. The Township of Hanover participated in a mitigation action workshop in March 2020 and was provided a Mitigation Toolbox that included a mitigation catalog developed specifically for Morris County and its hazards of concerns;



challenges and opportunities identified during the capability and risk assessments; and the following FEMA publications to use as a resource as part of their comprehensive review of all possible activities and mitigation measures to address their hazards: FEMA 551 *Selecting Appropriate Mitigation Measures for Floodprone Structures* (March 2007) and FEMA *Mitigation Ideas – A Resource for Reducing Risk to Natural Hazards* (January 2013). Section 6 (Mitigation Strategy) and Appendix F (Mitigation Strategy Supplement) provide a more complete description of the Mitigation Toolbox and its resources.

Table 9.13-16 summarizes the comprehensive-range of specific mitigation initiatives the Township of Hanover would like to pursue in the future to reduce the effects of hazards. Some of these initiatives might be previous actions carried forward for this HMP update. Initiatives are dependent upon available funding (grants and local match availability) and can be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6 (Mitigation Strategy), 14 criteria were used to evaluate each action, including an evaluation of the benefits and costs. For each new mitigation action, a numeric rank was assigned (-1, 0, or 1) for each of the 14 evaluation criteria. The results of this evaluation, in addition to input from the jurisdiction, were then used to prioritize the mitigation initiatives as 'High', 'Medium', or 'Low.' Table 9.13-17 summarizes the evaluation of each mitigation initiative and the resulting priority, listed by Action Number.



Table 9.13-16. Proposed Hazard Mitigation Initiatives and Action Priority

Initiative Number	Mitigation Initiative Name	Description of the Problem	Description of the Solution	New or Existing Assets?	Hazard(s) to be Mitigated	Goals Met	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Cost	Timeline	Priority	Mitigation Category	CRS Category
2020-Hanover-001	Texas Eastern Gas Transmission	Texas Eastern Gas Transmission is in the floodplain.	Educate the owners of the property that the property is identified in the flood plain.	Existing	Flood	1, 2	<u>Engineerin</u> g, FPA	Operating budget	Mediu m	Low	Sh ort	Lo w	SIP, EAP	PP, PI
2020-Hanover-002	Whippany - Suburban Energy Services	Whippany - Suburban Energy Services is in the flood plain	Educate the owners of the property that the property is identified in the flood plain.	Existing	Flood	1, 2	<u>Engineerin</u> g, FPA	Operating budget	Mediu m	Low	Sh ort	Lo w	SIP, EAP	PP, PI
2020-Hanover-003	Lake Parsippany Dike	Lake Parsippany Dike on Eastmans Brook is a critical facility in the flood plain.	Ensure EOP includes the Lake Parsippany Dike. Complete dam failure studies, where necessary.	Existing	Dam Failure, Earthqua ke, Flood, Geologic al Hazards, Severe Weather, Severe Winter Weather	1, 4	<u>Engineerin</u> g, FPA, OEM	Operating budget	Mediu m	Medi um	Sh ort	Lo w	SIP	PP
2020-Hanover-004	New Jersey No Name #56	New Jersey No Name #56 Dam on Malapadis Brook is a critical facility in the flood plain.	Ensure EOP includes the Lake Parsippany Dike (NJ No Name #56). Complete dam failure studies, where necessary.	Existing	Dam Failure, Earthqua ke, Flood, Geologic al Hazards, Severe Weather, Severe Winter Weather	1, 4	Engineerin g, FPA, OEM	Operating budget	Mediu m	Medi um	Sh ort	Me diu m	SIP	PP
2020-Hanover-005	James Muir Dam	James Muir Dam on the Rockaway River	Ensure EOP includes the James Muir	Existing	Dam Failure, Earthqua	1, 4	<u>Engineerin</u> g, FPA, OEM	Operating budget	Mediu m	Medi um	Sh ort	Me diu m	SIP	PP



Initiative Number	Mitigation Initiative Name	Description of the Problem	Description of the Solution	New or Existing Assets?	Hazard(s) to be Mitigated	Goals Met	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Cost	Timeline	Priority	Mitigation Category	CRS Category
		is a critical facility in the floodway.	Dam. Complete dam failure studies, where necessary.		ke, Flood, Geological Hazards, Severe Weather, Severe Winter Weather									
2020-Hanover-006	Eden Mill Dam	Eden Mill Dam on the Whippany River is a critical facility in the floodway that is determined as Hazard Class II for Significant Hazard.	Notify the River Park Business Center, LLC that the Eden Mill Dam is a critical facility in floodplain. Ensure EOP includes the dam. Request a copy of their dam failure study.	Existing	Dam Failure, Earthquake, Flood, Geological Hazards, Severe Weather, Severe Winter Weather	1, 4	Engineering, FPA, OEM	Operating budget	Medium	Medium	Short	Medium	SIP, EAP	PP, PI
2020-Hanover-007	RL/SRL/Flood prone properties	Ten properties have repetitive losses and one has severe repetitive loss. Many are condos and businesses on Routh 10 in Whippany that is in the Passaic River Floodplain.	Track flood-prone facilities and educate the owners of the RL/SRL properties that their property is identified and provide them mitigation options. Determine if they want to participate in a FEMA grant application and apply for funding.	Existing	Flood, Severe Storm, Severe Winter Weather	1, 5	Engineering, FPA	Operating budget	High	Low	Short	Medium	SIP, EAP	PP, PI



Initiative Number	Mitigation Initiative Name	Description of the Problem	Description of the Solution	New or Existing Assets?	Hazard(s) to be Mitigated	Goals Met	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Cost	Timeline	Priority	Mitigation Category	CRS Category
2020-Hanover-008	Parsippany Road and Horsehill Road	Drainage along Parsippany Road and Horsehill Road floods.	2020 budget funds to conduct a drainage study at the bottom of Horse Hill Road have been requested by Township Engineer.	Existing	Flood, Severe Storm, Severe Winter Storm	1, 4	Engineering, FPA	HMGP, FPA	High	High	Long	Medium	SIP	PP
2020-Hanover-009	Whippany Fire Department	Whippany Fire Department on 440 Route 10 is in progress to 11 Troy Hills Road.	Relocation of Whippany Fire Department will be complete soon.	Existing	Dam Failure, Earthquake, Extreme Temperature, Flood, Geological Hazards, Hazardous Substances, Severe Weather, Severe Winter Weather, Wildfire	1, 4	Fire Department, Engineering	Municipal	High	High	Short	High	SIP	PP, ES
2020-Hanover-010	Communications Upgrade	Communications system in lifeline buildings of the Municipal Building, DPW, and Community center do not have connectivity of phone lines.	Work with Verizon Public Sector Solutions to determine the mitigation actions.	New	Dam Failure, Disease Outbreak, Drought, Earthquake, Extreme Temperature, Flood,	1, 4	OEM, Administration	Municipal budget	High	Medium	Medium	High	SIP, LPR	PP, ES



Initiative Number	Mitigation Initiative Name	Description of the Problem	Description of the Solution	New or Existing Assets?	Hazard(s) to be Mitigated	Goals Met	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Cost	Timeline	Priority	Mitigation Category	CRS Category
					Geologic Hazards, Harmful Algal Bloom, Hazardous Substances, Infestation, Severe Weather, Severe Winter Weather, Wildfire									
2020-Hanover-011	Cedar Knolls Fire House	Retrofit building/secure structures (tent) outside of Cedar Knolls Fire House at 82 Ridgedale Avenue	In discussion with mitigation committee and being reviewed by Fire Commissioners	New	Dam Failure, Earthquake, Extreme Temperature, Flood, Geologic Hazards, Hazardous Substances, Severe Weather, Severe Winter Weather, Wildfire	1, 4	OEM/Engineering	Municipal Budget, HMGP, PDM	High	Medium	Short	High	SIP	PP, ES
2020-Hanover-012	Community Center Backup Generator	Load analysis determined that the Community	Township Engineer is researching		Dam Failure, Earthquake		OEM/Engineering	Municipal Budget,	High	Medium	Short	High	SIP	PP, ES



Initiative Number	Mitigation Initiative Name	Description of the Problem	Description of the Solution	New or Existing Assets?	Hazard(s) to be Mitigated	Goals Met	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Cost	Timeline	Priority	Mitigation Category	CRS Category
		Center (warming/cooling center) on 15 North Jefferson requires an upgrade to the backup power generator.	options for cooling and estimated costs of replacing existing generator.		ke, Extreme Temperature, Flood, Geological Hazards, Hazardous Substances, Severe Weather, Severe Winter Weather, Wildfire			HMGP, PDM						

Notes:

Acronyms and Abbreviations:

CAV	Community Assistance Visit
CRS	Community Rating System
DPW	Department of Public Works
FEMA	Federal Emergency Management Agency
FPA	Floodplain Administrator
HMA	Hazard Mitigation Assistance
N/A	Not applicable
NFIP	National Flood Insurance Program
OEM	Office of Emergency Management

Potential FEMA HMA Funding Sources:

FMA	Flood Mitigation Assistance Grant Program
HMGP	Hazard Mitigation Grant Program
PDM	Pre-Disaster Mitigation Grant Program

Timeline:

The time required for completion of the project upon implementation

Cost:

The estimated cost for implementation.

Benefits:

A description of the estimated benefits, either quantitative and/or qualitative.

Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses and preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities.

CRS Category:

- Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.



- *Property Protection (PP) - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.*
- *Public Information (PI) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.*
- *Natural Resource Protection (NR) - Actions that minimize hazard loss and preserve or restore the functions of natural systems. Actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.*
- *Structural Flood Control Projects (SP) - Actions that involve the construction of structures to reduce the impact of a hazard. Structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.*
- *Emergency Services (ES) - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.*



Table 9.13-17. Summary of Evaluation and Action Priorities

Initiative Number	Mitigation Initiative Name	Life Safety	Property Protection	Cost Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
2020-Hanover-001	Texas Eastern Gas Transmission	1	1	0	0	0	1	0	0	0	0	0	0	0	0	3	Low
2020-Hanover-002	Whippany - Suburban Energy Services	1	1	0	0	0	1	0	0	0	0	0	0	0	0	3	Low
2020-Hanover-003	Lake Parsippany Dike	1	1	0	1	0	1	0	1	1	0	0	0	0	0	6	Medium
2020-Hanover-004	New Jersey No Name #56	1	1	0	1	0	1	0	0	1	0	0	0	0	0	5	Medium
2020-Hanover-005	James Muir Dam	1	1	0	1	0	1	0	0	1	0	0	0	0	0	5	Medium
2020-Hanover-006	Eden Mill Dam	1	1	1	1	0	1	1	1	1	0	0	0	0	0	8	Medium
2020-Hanover-007	RL/SRL/Flood prone properties	1	1	0	1	0	1	1	1	1	0	0	0	0	1	8	Medium
2020-Hanover-008	Parsippany Road and Horsehill Road	1	1	0	1	1	1	1	1	1	1	0	0	0	1	10	High
2020-Hanover-009	Whippany Fire Department	1	1	1	1	1	1	1	0	1	1	1	1	0	0	11	High
2020-Hanover-010	Communications Upgrade	1	1	1	1	1	1	1	0	1	1	1	1	0	1	12	High
2020-Hanover-011	Cedar Knolls Fire House	1	1	1	1	0	1	1	0	1	1	1	1	1	1	12	High
2020-Hanover-012	Community Center Backup Generator	1	1	1	1	0	1	1	0	1	1	1	1	1	1	12	High

Notes: Section 6 (Mitigation Strategy) conveys guidance on prioritizing mitigation actions.



Table 9.13-18. Analysis of Mitigation Actions by Hazard and Category

Hazard	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
Dam Failure	003, 004, 005, 006, 009, 010, 011, 012	003, 004, 005, 006, 009, 010, 011, 012	003, 004, 005, 006, 009, 010, 011, 012	003, 004, 005, 006, 009, 010, 011, 012	003, 004, 005, 006, 009, 010, 011, 012	003, 004, 005, 006, 009, 010, 011, 012	003, 004, 005, 006, 009, 010, 011, 012	003, 004, 005, 006, 009, 010, 011, 012
Disease Outbreak	-	009, 010	-	-	009, 010	-	-	009, 010
Drought	-	009, 010	-	-	009, 010	-	-	009, 010, 011
Earthquake	-	009, 010, 011, 012	-	-	009, 010, 011, 012	-	-	009, 010, 011, 012
Extreme Temperature	-	009, 010, 011	-	-	009, 010, 011	-	-	009, 010, 011
Flood	-	-	-	-	001, 002, 003, 004, 005, 006, 007, 008, 009, 010, 011, 012	003, 004, 005, 006, 008, 009, 011, 012	-	009, 010, 011, 012
Geological	-	-	-	-	009, 010, 011, 012	-	-	009, 010, 011, 012
Harmful Algal Bloom	-	-	-	-	009, 010	-	-	009, 010
Hazardous Substance	-	-	-	-	009, 010, 011, 012	-	-	009, 010, 011, 012
Infestation	-	-	-	-	009, 010	-	-	009, 010
Severe Weather	-	001, 002, 003, 004, 005, 006, 007, 008, 009, 010, 011, 012	001, 002, 003, 004, 005, 006, 007, 008, 009, 010, 011, 012	-	001, 002, 003, 004, 005, 006, 007, 008, 009, 010, 011, 012	-	-	009, 010, 011, 012
Severe Winter Weather	-	001, 002, 003, 004, 005, 006, 007, 008, 009, 010, 011, 012	001, 002, 003, 004, 005, 006, 007, 008, 009, 010, 011, 012	-	001, 002, 003, 004, 005, 006, 007, 008, 009, 010, 011, 012	-	-	009, 010, 011, 012
Wildfire	009, 010, 011	009, 010, 011, 012	-	-	009, 010, 011, 012	-	-	009, 010, 011, 012

Note: Section 6 (Mitigation Strategy) provides for an explanation of the mitigation categories.

RED = high ranked hazard

ORANGE = medium ranked hazard

YELLOW = low ranked hazard

9.13.8 Staff and Local Stakeholder Involvement in Annex Development

The Township of Hanover followed the planning process described in Section 2 (Planning Process). This annex was developed over the course of several months with input from many jurisdiction representatives. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization. The following table summarizes who participated and in what capacity. Additional documentation on the municipality's planning process through Planning Partnership meetings is included in Section 2 (Planning Process) and Appendix C (Meeting Documentation).



Table 9.13-19. Contributors to the Annex

Entity	Title	Method of Participation
Thomas Quirk	OEM Director	Attended 1 st Annex meeting, provided annex review and comments
Gerardo Maceira, PE	Township Engineer	Attended 1 st Annex meeting, provided annex review and comments



Figure 9.13-1. Township of Hanover Hazard Area Extent and Location Map 1

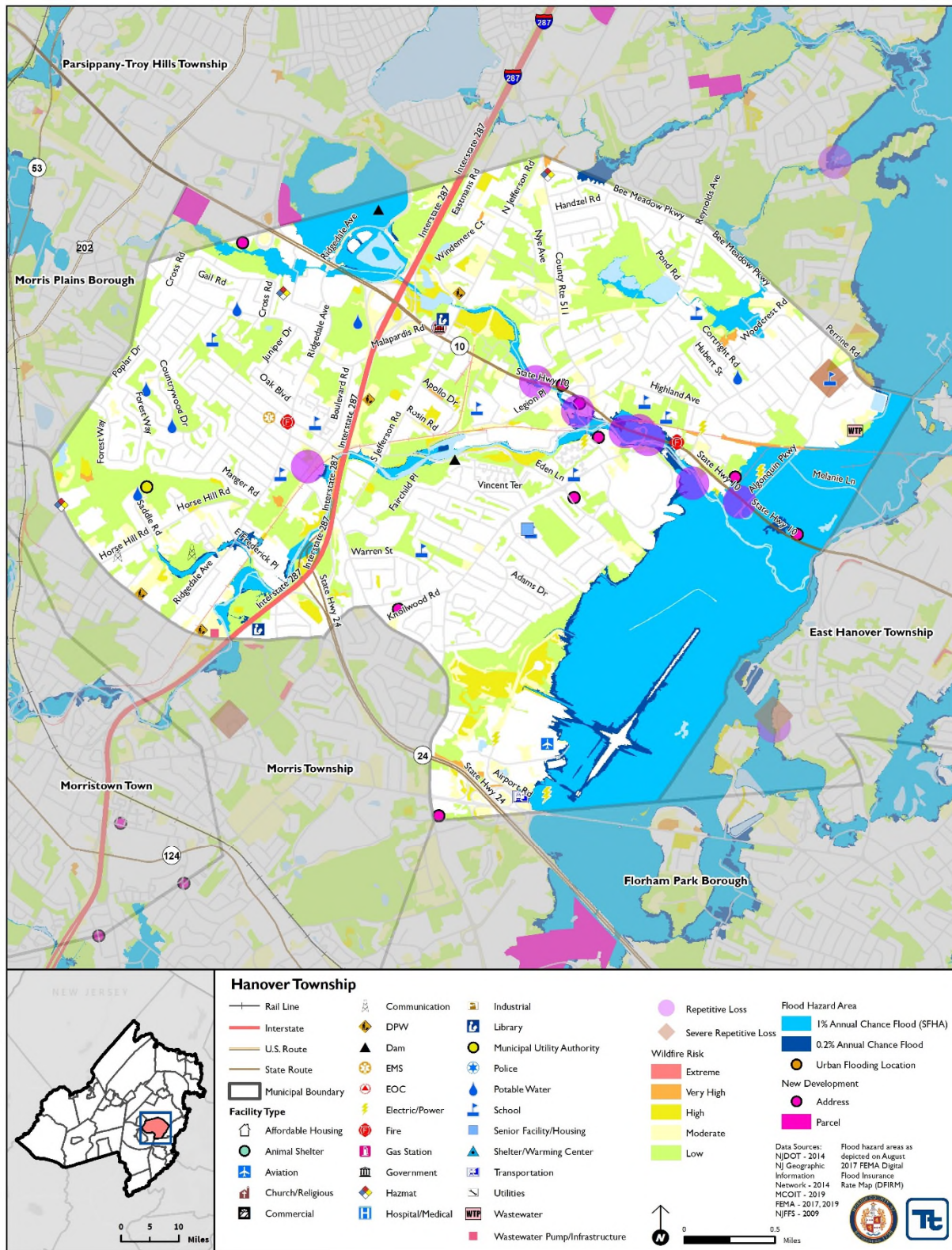
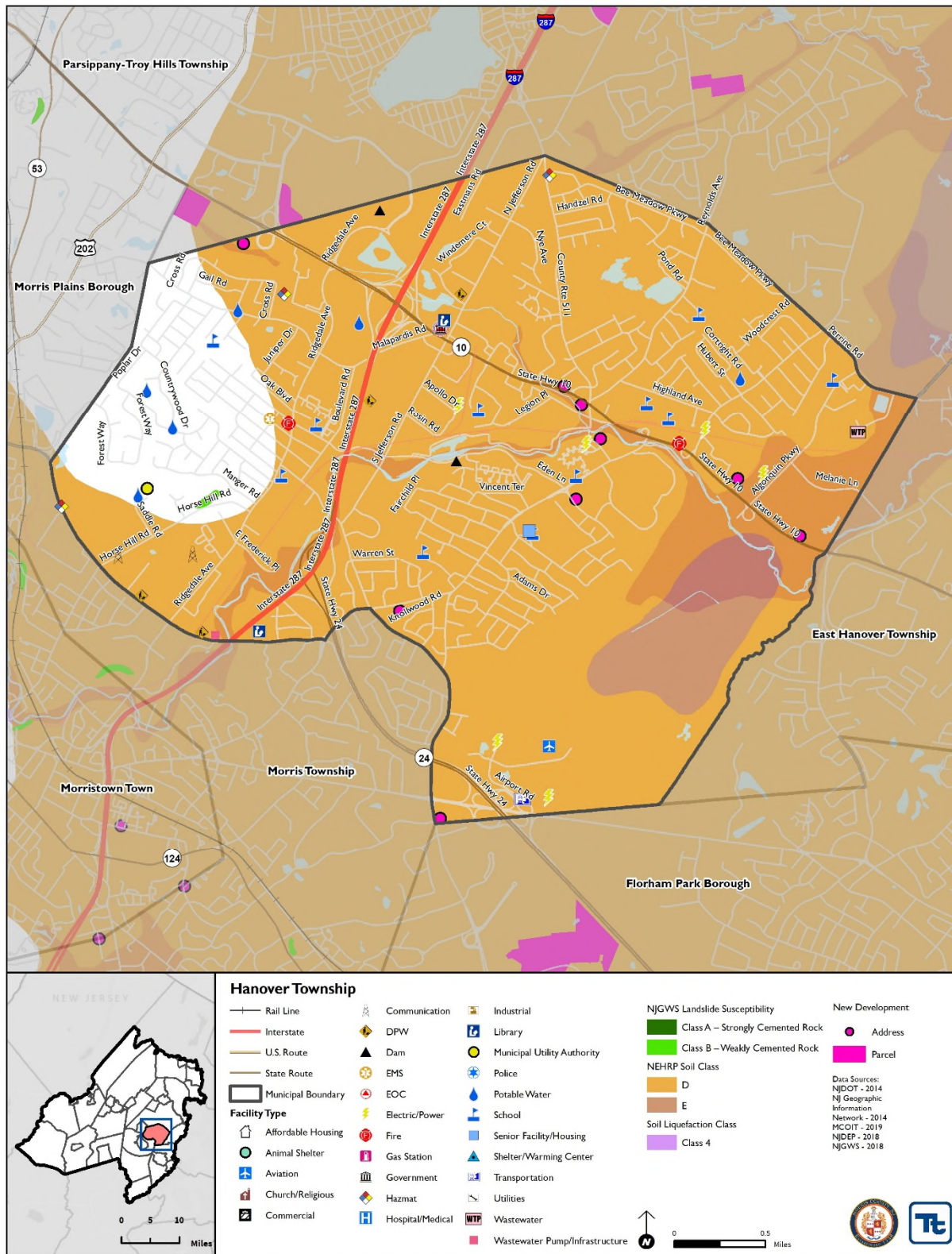




Figure 9.13-2. Township of Hanover Hazard Area Extent and Location Map 2





Action Worksheet			
Project Name:	Parsippany Road and Horsehill Road Drainage		
Project Number:	2020-Hanover-008		
Risk / Vulnerability			
Hazard(s) of Concern:	Flood, Severe Storm, Severe Winter Weather		
Description of the Problem:	Parsippany Road and Horsehill Road Drainage along Parsippany Road and Horsehill Road floods.		
Action or Project Intended for Implementation			
Description of the Solution:	2020 budget funds to conduct a drainage study at the bottom of Horse Hill Road have been requested by Township Engineer.		
Is this project related to a Critical Facility or Lifeline?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Level of Protection:	100-year	Estimated Benefits (losses avoided):	Avoid flooding
Useful Life:	TBD	Goals Met:	
Estimated Cost:	TBD	Mitigation Action Type:	SIP
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Medium
Estimated Time Required for Project Implementation:	Medium	Potential Funding Sources:	HMGP, PDM
Responsible Organization:	Engineering	Local Planning Mechanisms to be Used in Implementation if any:	Hazard Mitigation
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Perform engineering study	Medium	Cost effective to determine mitigation
	Install short-term solution	Low	Does not fix problem
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Parsippany Road and Horsehill Road Drainage	
Project Number:	2020-Hanover-008	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	
Cost-Effectiveness	0	
Technical	1	
Political	1	
Legal	1	
Fiscal	1	
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	0	
Timeline	0	
Agency Champion	0	
Other Community Objectives	1	
Total	10	
Priority (High/Med/Low)	High	



Action Worksheet			
Project Name:	Eden Mill Dam		
Project Number:	2020-Hanover 006		
Hazard(s) of Concern:	Dam Failure, Earthquake, Flood, Severe Storm, Severe Winter Weather		
Description of the Problem:	Eden Mill Dam on the Whippany River is a critical facility in the floodway that is determined as Hazard Class II for Significant Hazard.		
Action or Project Intended for Implementation			
Description of the Solution:	Notify the River Park Business Center, LLC that the Eden Mill Dam is a critical facility in floodplain. Ensure EOP includes the dam. Request a copy of their dam failure study.		
Is this project related to a Critical Facility or Lifeline?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Level of Protection:	High	Estimated Benefits (losses avoided):	Medium
Useful Life:	TBD	Goals Met:	1, 4
Estimated Cost:	Low	Mitigation Action Type:	SIP, EAP
Plan for Implementation			
Prioritization:	Medium	Desired Timeframe for Implementation:	Short
Estimated Time Required for Project Implementation:	Short	Potential Funding Sources:	Municipal budget, HMGP, PDM
Responsible Organization:	Engineering, FPA Administration	Local Planning Mechanisms to be Used in Implementation if any:	Hazard Mitigation
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Notify owner and ensure safety	Low	Cost effective
	Relocate dam	High	Infeasible
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Eden Mill Dam	
Project Number:	2020-Hanover 006	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	
Cost-Effectiveness	1	
Technical	1	
Political	0	
Legal	1	
Fiscal	1	
Environmental	1	
Social	1	
Administrative	0	
Multi-Hazard	0	
Timeline	0	
Agency Champion	0	
Other Community Objectives	0	
Total	8	
Priority (High/Med/Low)	Medium	



Name of Jurisdiction: Southeast Morris County Municipal Utilities Authority
Name and Title Completing Worksheet: Zehra Karim, Senior Engineer, SMCMUA

Project Location: Township of Hanover

Action Worksheet			
Project Name:	Black Brook Wells and Treatment Plant Upgrade		
Project Number:	2020-01 BB Wells		
Risk / Vulnerability			
Hazard(s) of Concern:	Wells and treatment plant building below flood elevation.		
Description of the Problem:	Two groundwater wells and a treatment plant building are below flood elevation. Loss of water service may happen in the event of a major flood.		
Action or Project Intended for Implementation			
Description of the Solution:	Upgrade of the wells and treatment plant buildings to raise them above the flood elevation.		
Is this project related to a Critical Facility or Lifeline?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Level of Protection:	High	Estimated Benefits (losses avoided):	Loss of water service
Useful Life:	TBD	Goals Met:	1, 4
Estimated Cost:	\$3,000,000	Mitigation Action Type:	SIP
Plan for Implementation			
Prioritization:	HIGH	Desired Timeframe for Implementation:	12 months
Estimated Time Required for Project Implementation:	2 to 3 years	Potential Funding Sources:	HMGP
Responsible Organization:	SMCMUA	Local Planning Mechanisms to be Used in Implementation if any:	-
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Building Upgrades	\$3,000,000	Raising the structure levels will eliminate risk of water service loss during a major flood.
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Name of Jurisdiction:

Southeast Morris County Municipal Utilities Authority

Name and Title Completing Worksheet:

Zehra Karim, Senior Engineer, SMCMUA

Action Worksheet		
Project Name:	Black Brook Wells and Treatment Plant Upgrade	
Project Number:	2020-01 BB Wells	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
• Life Safety	0	
• Property Protection	1	Project implementation will eliminate risk of property damage during next major flood event
• Cost-Effectiveness	1	
• Technical	1	
• Political	0	
• Legal	1	SMCMUA is the sole authority having jurisdiction of the wells and TP building
• Fiscal	1	Project would require new funding/grant source
• Environmental	1	Project implementation may eliminate env. impacts during major flood
• Social	0	No adverse social impacts
• Administrative	1	Jurisdiction has personnel or administrative capabilities
• Multi-Hazard	1	
• Timeline	1	Project can be finished within 5 years
• Agency Champion	1	Project is supported by Board members from 4 Creating Municipalities (Morristown, Morris Township, Morris Plains & Hanover Twp.)
• Other Community Objectives	1	
• Total	11	
• Priority (High/Med/Low)	High	



Name of Jurisdiction:

Southeast Morris County Municipal Utilities Authority

Name and Title Completing Worksheet:

Zehra Karim, Senior Engineer, SMCMUA

Project Location: Township of Hanover

Action Worksheet			
Project Name:	Backup Power at Various Sites		
Project Number:	2020-01 Gensets		
Risk / Vulnerability			
Hazard(s) of Concern:	No power backup in case of a natural hazard event		
Description of the Problem:	Currently no backup power supply at the MCMUA sites. Potential power loss at major water supply sites in the system in the event of a natural hazard like flood or storm.		
Action or Project Intended for Implementation			
Description of the Solution:	Backup power generators required at the following sites: Wing Well, Todd Well, Black Brook Wells (all sites located in Hanover Township)		
Is this project related to a Critical Facility or Lifeline?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Level of Protection:	High	Estimated Benefits (losses avoided):	No loss of power
Useful Life:	19 years	Goals Met:	1, 4
Estimated Cost:	\$1,500,000	Mitigation Action Type:	SIP
Plan for Implementation			
Prioritization:	HIGH	Desired Timeframe for Implementation:	6 to 12 months
Estimated Time Required for Project Implementation:	12 months	Potential Funding Sources:	HMGP
Responsible Organization:	SMCMUA	Local Planning Mechanisms to be Used in Implementation if any:	-
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Power backup	\$1.5M to \$2.0M	Backup power supply will prevent water supply shutdowns.
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Name of Jurisdiction:

Southeast Morris County Municipal Utilities Authority

Name and Title Completing Worksheet:

Zehra Karim, Senior Engineer, SMCMUA

Action Worksheet		
Project Name:	Backup power at various sites	
Project Number:	2020-01 Gensets	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project implementation will eliminate risk of impact on quality of life during next major flood event.
Property Protection	0	
Cost-Effectiveness	1	
Technical	1	
Political	0	
Legal	1	SMCMUA is the sole authority having jurisdiction of the well sites
Fiscal	1	Project would require new funding/grant source
Environmental	1	Project implementation may eliminate env. impacts during major flood
Social	0	No adverse social impacts
Administrative	1	Jurisdiction has personnel or administrative capabilities
Multi-Hazard	1	
Timeline	1	Project can be finished within next 12 months
Agency Champion	1	Project is supported by Board members from 4 Creating Municipalities (Morristown, Morris Township, Morris Plains & Hanover Twp.)
Other Community Objectives	1	
Total	11	
Priority (High/Med/Low)	High	